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COMPUTER

DECISIONS

MIS BUILDS A MICRO

CAN THESE MIDRANGE VENDORS SURVIVE?
TELECOMM TOOLS THAT WILL AMAZE YOU
WHY CORPORATE PUBLISHING RUNS AMOK

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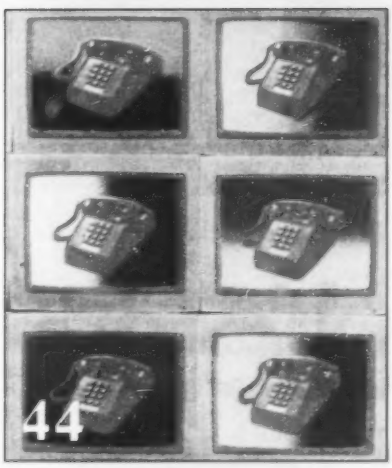

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The Hole in the Machine

We were of course gratified by the response on the part of IS professionals to our challenge to "design" the microcomputer that represents an optimal configuration for corporate applications (see cover and page 40). What we really asked for, however, was a practical *definition*, rather than a design. Anybody can fantasize in the realm of price-is-no-object technology or dream about ultimates; we wanted to know what a package of today's off-the-shelf parts would look like if our readers built it by consensus.

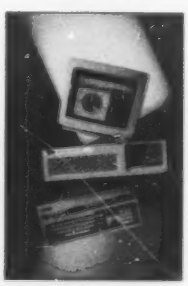
That definition, translated into hardware with the cooperation of Dell Computer Corp., feels pretty good to us. Having a 16-MHz 386 chip and 2 Mbytes of extended/expanded memory in hand to attack the latest upgrades of the ever-popular DOS applications is like taking off on a two-lane blacktop in a custom-tooled European road machine—the family sedan will never feel the same. Even when OS/2 turns the highway into a networked Autobahn, this level of performance should still be in tune with the medium.

Having said that, I am also bound to report on what I perceive as the consensus's failure to produce a configuration that successfully addresses the myth of microcomputer expandability. Faster than you can say "eight great slots," we had them filled. Dell had already taken five slots: the disk controller, the system memory board with its extra-fast static RAM, the VGA video card, and a parallel/serial card with an extra serial port in the slot next door. Then it was our turn: In goes our network board; next, the interface card for a 40-Mbyte removable cartridge drive; and finally a rather imposing sandwich of a full-length board that drives an extra monochrome monitor capable of 300 dots-per-inch resolution.

Toys, you say. Not really; one can make a case in the name of better, faster electronic publishing for all of these things. I'm sure there are plenty of slot-starved users out there in mainstream corporate departments with similar, if not more readily justifiable, needs. So far as playtime goes, I'm sitting here with my bus mouse port in one hand and my joystick jack in the other—shut out for lack of space.

We need machines with more holes in them.

Robin Nelson



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Roberto Brosan

THE MIDRANGE STRUGGLE: IN THE SHADOW OF GIANTS

As MIS consolidates midrange systems spending on DEC and IBM, the 'mini Bunch' vendors must find new ways to grow.

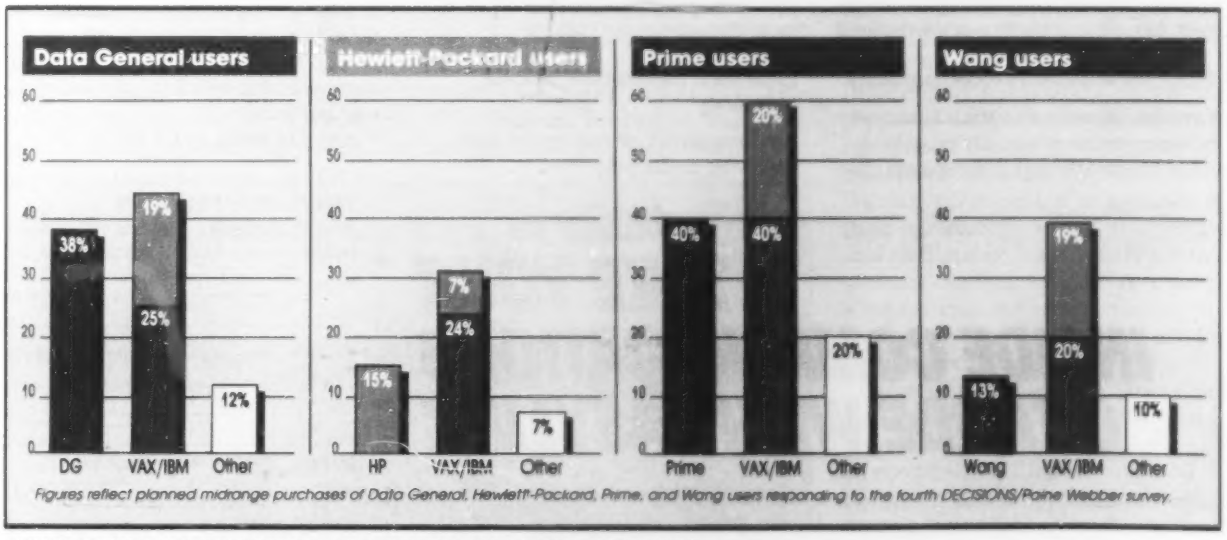
by Robert Moran and Lee Keough

Back in the days before minicomputers were known as midrange processors, Data General Corp., Hewlett-Packard Co., Prime Computer Inc., Wang Laboratories Inc., and Digital Equipment Corp. racked up huge sales simply by selling a better mousetrap at a lower price than IBM. For all but DEC, that's no longer the case.

Faced with a need to smooth networking and reduce costs, MIS is employing fewer computer architectures. Increasingly, MIS short lists of processor suppliers contain but two names: IBM and DEC. Data General, Hewlett-Packard, Prime, and Wang have become a "mini Bunch" fighting to be seen in a market dominated by the two giants.

The four vendors face a much tougher sell to MIS, slower growth, and, in the case of Data General and Wang, financial losses. Data from the latest DECISIONS/Paine Webber Survey of MIS Attitudes (see chart) tell a daunting story for the four. Data General, Hewlett-Packard, Prime, and Wang can't rely on their user bases for heavy repeat sales; many of their current users plan to buy new processors from IBM and DEC.

The movement of midrange spending to IBM and DEC is likely to accelerate. "Prime has a super machine, and I like Data General's CEO office



Figures reflect planned midrange purchases of Data General, Hewlett-Packard, Prime, and Wang users responding to the fourth DECISIONS/Paine Webber survey.

MIDRANGE SPENDING: FOCUSED ON DEC AND IBM ■VAX ■IBM

Data from the latest DECISIONS/Paine Webber Survey of MIS Attitudes indicate MIS is putting more dollars into DEC and IBM midrange systems than into systems sold by Data General, Hewlett-Packard, Prime Computer, and Wang Labs. Percentages reflect purchases from many vendors; thus, they don't add up to 100 percent.

environment better than [DEC's] All-in-One, but those issues are small considerations in the overall scheme of things," says Larry Goetz, manager of corporate planning for CSX Corp., a major transportation company based in Richmond, VA. "We have IBM and DEC in every one of our subsidiaries. It's just not feasible to have one Data General or Prime computer in a sea of IBM and DEC." Within five years, says Goetz, CSX will phase out its Data General and Prime systems.

Not all users have reached the decision Goetz has, but the mini Bunch vendors themselves recognize that more will. "Five years from now, there will be very few large general-purpose hardware suppliers other than IBM and DEC," says Robert Fischer, Prime's vice president of computer-aided design and manufacturing systems. The question is, which of the four will survive as large, integrated, general-systems vendors?

Midrange spending trends are the most immediate problem for the mini Bunch, but not the only one. All midrange vendors face erosive competition from local-area networks linking powerful microcomputers. Analysts expect Operating System/2 to accelerate the installation of these LANs—at the expense of minicomputers.

And then there's the Unix question. Unix is good news, bad news, and worse news for the mini Bunch. The good news is that Unix allows a vendor to sell to government accounts and may free it from heavy operating system development costs.

The bad news is that the mini Bunch vendors have big office/commercial customer bases that must be sold on Unix. George Weiss, small systems analyst at the Gartner Group Inc. (Stamford, CT), expects Data General's VOS, Hewlett-Packard's MPE, Prime's Primos, and Wang's VS operating systems to "vaporize" as users demand Unix, but the process will be slow. That means dual operating system support—an expensive proposition—for years to come. Worse, moving to Unix thrusts vendors into the hotly contested Unix platform market. Again, visibility in a crowd will be a problem.

MIS managers are asking many questions of the four computer makers. They want insight into strategies for marketing, technology, service and support, networking, and systems integration, and they want to know how the vendors plan to grow and stay healthy. The answers to these questions will help MIS decide whether to continue dealing with a mini Bunch vendor and on what terms.

Each vendor is adapting in its own way. Here's how they stack up:

Data General

Data General Corp.
Westboro, MA

Sales	Profits (Losses)
1987—$1.3 billion	1987—($118 million)
1986—$1.29 billion	1986—($27 million)
1985—$1.2 billion	1985—$2.4 million

Strengths
1. High-quality VAR and OEM distributors
2. Good processor price/performance ratios
3. CEO software

Weaknesses
1. Weak service and support
2. VAR/OEM reliance reduces profit margins
3. Ineffective marketing to corporate accounts

Questions/doubts
Will return to VAR/OEM roots fuel or stunt growth?

Of the four vendors in the mini Bunch, Data General faces the greatest struggle. "Data General is foundering," says John Logan, director of research for the Yankee Group, Boston. After losing $127 million in fiscal 1987 and $29 million the year before, Data General finally turned a profit of $12.4 million in the quarter ending December 31, but the gain mostly reflected reduced costs.

The company's strategy is to regroup by concentrating on its original equipment manufacturer and value-added reseller distributor network. The strategy has received a loud Bronx cheer from analysts. According to Logan, users are saying that if Data General can't compete for major accounts, it isn't good enough for ma and pa shops, either.

Data General officials counter that they can't justify devoting such large resources in attempts to compete with IBM for major corporate accounts. For whatever reason, says Ward MacKenzie, vice president of corporate marketing, Data General is unlikely to beat IBM to these accounts, and so it will confine end-user sales efforts to its installed base.

MacKenzie asserts that analysts don't understand the value of Data General's OEM and VAR channels. Aggressive price discounts to resellers and migration centers for third-party software vendors have helped Data General gain 100 new VARs in the past year, he notes.

Few criticize Data General's basic technology. Its processors are respected for their price/performance ratios, and its CEO office software is highly regarded by users. Analysts like Logan, however, say that a retrenchment won't reverse Data General's lateness with key connectivity products. The vendor was late with micro integration products, for example, although it now offers proprietary as well as X.400 connectivity to IBM systems.

Retrenchment also won't necessarily bolster Data General's poor reputation for service and support, or instill it with instant marketing savvy. "Data General's problem is sales and marketing," says Patricia Seybold, a Boston-based consultant and DECISIONS columnist. "It can't sell its way out of a paper bag."

Recognizing its marketing problems, Data General has beefed up its sales force, expanded its field service operations, and added remote diagnostics capabilities.

Bob Hantack, vice president of Beneficial Data Processing Corp., the Peapack, NJ, dp subsidiary of Beneficial Corp., says he asked tough questions of Data General—and got good answers. He'll stick with Data General—the account is worth about $60 million—for the time being. "Data General was very candid with us about their financial problems," says Hantack. "The company seems to be turning things around."

Still, Hantack's loyalty will last only as long as Data General stays abreast of the competition. "I would look at other vendors, but at this point I would look at Data General and IBM most closely, because we've standardized on those two," he says.

HEWLETT PACKARD

Hewlett-Packard Co.
Palo Alto, CA

Sales	Profits
1987—$8.1 billion	1987—$644 million
1986—$7.1 billion	1986—$516 million
1985—$6.5 billion	1985—$489 million

Strengths
1. Good processor price/performance ratios
2. Large line of PC products
3. Strong service, support, and DBMS

Weaknesses
1. Low profit margins on micro products
2. Customer doubts caused by delays in delivery of new midrange line

Questions/doubts
How fast will HP 3000 users migrate to an entirely new architecture?

Hewlett-Packard Co. is the strongest of the mini Bunch, only partially because it is the largest. After weathering a halting start to its new family of Precision Architecture (also known as Spectrum) processors, Hewlett-Packard is mustering a major challenge to DEC's position as the top midrange systems vendor.

Precision Architecture is based on a reduced instruction set computing (RISC) design, which has been incorporated into the HP 3000/900 series of general-purpose computers and HP 1000/800 engineering machines. RISC streamlines the machine instructions needed to run a computer and simplifies design by hardwiring instructions that are usually written into microcode into the processor itself. The result: increased performance coupled with lower manufacturing costs. Precision Architecture computers cost from 40 percent to 60 percent less than similar machines marketed by IBM or DEC.

Hewlett-Packard is poised to take advantage of its Precision Architecture now, but it has paid a heavy price. Precision Architecture has been best known until now for the delays in its arrival. Two factors contributed to the delays. First, existing applications, although compatible with the new RISC design, won't run faster under it unless they are modified. Hewlett-Packard established a migration center—at considerable cost—to accomplish these conversions. Second, as the HP 3000 Models 930 and 950 were being readied for market, Hewlett-Packard discovered a bottleneck in the input/output channels under its MPE operating system that negated the performance advantages of RISC. The result was a six-month delay in the introduction of the 930 and 950. Hewlett-Packard's Unix-based engi-

neering processors were introduced without a hitch.

Hewlett-Packard's fits and starts fueled doubts about its ability to deliver a new architecture. John Logan believes the company's success will be determined by how aggressively it markets its systems this year. So far, he says, so good. "The product has been shipping only five months, but we estimate HP has sold $100 million worth of midrange systems that DEC was capturing," says Logan. In Logan's view, Hewlett-Packard has been able to seize an advantage over DEC due to its superior DBMS, as well as the relative low cost of its systems.

Not all analysts are as sanguine. The latest DECISIONS/Paine Webber survey shows that only 15 percent of those MIS executives who have Hewlett-Packard machines installed plan to buy new Hewlett-Packard processors this year. "A lot of people are looking for HP to be the next DEC on the basis of Spectrum, but our survey does not support that conclusion," says Stephen Smith, hardware analyst at Paine Webber.

Hewlett-Packard trumpets five advantages over DEC: better processor performance for the price, a superior database management system, a longstanding commitment to Unix, more functional microcomputer integration, and top-flight service and support.

More than any other midrange vendor, Hewlett-Packard has made the micro an integral part of its office systems product line. The company dominates the office laser printer market, sells a line of IBM Personal Computer clones, and recently has distinguished itself as a software innovator. New Wave is an object management extension to Microsoft Corp.'s Windows and OS/2 Presentation Manager, and HP Access gives micro users access to HP 3000 files and certain IBM mainframe files without switching to terminal emulation. Raymond Pawlicki, an assistant vice president for Citicorp (New York), says HP Access is a reason to keep upgrading with Hewlett-Packard processors rather than migrate to another vendor. The product "makes a three-tiered environment a reality," he says.

Many users give Hewlett-Packard high marks in service and support, a fact that analysts believe may be the company's greatest advantage. James Conroy, corporate director of MIS for Reliance Electric Co. (Cleveland), stuck with Hewlett-Packard despite its Precision Architecture delays principally because he likes dealing with the company. "We waited because HP is a good company, and we knew it would ultimately solve the problem," he says.

Prime

Prime Computer Inc.
Natick, MA

Sales	Profits
1987—$961 million	1987—$65 million
1986—$860 million	1986—$47 million
1985—$770 million	1985—$58 million

Strengths
1. Good processor price/performance ratios
2. Strong CAD/CAM hardware and software
3. New focus on CAD/CAM market

Weaknesses
1. Incompatibilities between operating system upgrades
2. Ineffective marketing to corporate accounts

Questions/doubts
Will new reliance on CAD/CAM fuel high growth?

Like Data General, Prime Computer has abandoned efforts to become a general systems vendor marketing to end users. Unlike its neighbor on Route 128, however, Prime is not retrenching. Rather, it is moving aggressively to become a major supplier of manufacturing systems.

CAD/CAM comprises only a small portion—about 18 percent—of Prime's revenue. But the recent acquisition of Computervision Corp. (Bedford, MA), a troubled but big CAD/CAM software vendor, makes Prime a major player in the market. Prime's Robert Fischer estimates that with Computervision, Prime's world CAD/CAM market share will rise from 3.5 percent to about 17 percent. IBM's share is 25 percent.

CAD/CAM is the first piece of the new Prime. Future acquisitions will bolster Prime's offerings in three areas: manufacturing management systems, like cost estimating, materials management, and process planning; shop floor systems; and custom systems and systems integration.

Fischer says Prime will focus on wooing customers that have revenues of from $5 million to $1 billion, thereby minimizing potential clashes with IBM and DEC. With the strategy, Prime hopes to become a major force in a market characterized by small suppliers.

But Prime has much work to do. George Weiss of the Gartner Group believes that Prime must divide applications between its midrange and micro platforms to achieve its goal. "If users have to divide, reprogram, rerun applications, recompile, or do a lot of file transfers, they won't," he says.

Prime responds that support for a range of networking systems will be the glue that joins its micros, workstations, and midrange processors. Currently, Prime's bread-and-butter Model 50 Series processors only support Ethernet and TCP/IP networking protocols. Fischer promises support for Sun Microsystems Inc.'s NFS and Apollo Computer Inc.'s NCS protocols by midyear on the Model 50 Series, and support for native Unix at an unspecified future date. Prime also offers a gateway between its processors and SNA, an important consideration in commercial systems.

Prime's manufacturing systems strategy requires a rapid move to Unix, which is the preferred operating system in engineering and shop floor applications. Prime, thus, will be the first of the mini Bunch to experience the pain of transition to Unix. About 90 percent of installed Prime systems are running under Primos, says Fischer. Robert Miner, operations manager at Arizona Land Resource Information Systems (Phoenix), the dp arm of the state's Land Department, says his investment in Primos applications keeps him in Prime's camp.

Unix may change one aspect of Prime's operating system strategy. Users may no longer have to convert applications every time Prime gives them a new version of operating system software. Miner wouldn't be sad if this practice died. "I've been a Prime user since Primos Revision 17," he says. "We are now at Revision 21, and Prime doesn't support upgrade compatibility. I've had applications completely go away."

WANG

Wang Laboratories Inc.
Lowell, MA

Sales	Profits (Losses)
1987—$3.1 billion	1987—$94.6 million
1986—$2.7 billion	1986—($81.3 million)
1985—$2.4 billion	1985—($63.3 million)

Strengths
1. Good mainframe connectivity products
2. Strong DBMS software
3. Improving customer support

Weaknesses
1. Reputation for weak software support
2. Slow introduction of key products
3. Reliance for growth on untested technology

Questions/doubts
Will new imaging technology take off anytime soon?

Wang Laboratories is still struggling to convince MIS that word processing is its past and not its future. Wang's well-known ads touting its abilities as a general-systems vendor are the most visible of its tactics in approaching MIS, but the company is also banking on new image-processing technology to help change its image.

President Frederick Wang has set "perception" of Wang as the number-three systems vendor as one of his corporate goals for the next two years. The others are a 10 percent after-tax profit margin, $5 billion in revenues, and improved customer satisfaction. Wang was seventh on the last DECISIONS Performance Report ranking of systems vendors (June 1987), with revenues of $2.7 billion.

Analysts regard Wang's goals as ambitious, but Wang officials are confident. "In many places, Wang is the vendor of choice or at least the second choice," says Gerald Paul, vice president of business development.

For growth, Wang is relying on image processing to open new office markets. Wang has been selling image processing since 1984, when it introduced the Professional Image Computer. Last year, that machine became the Wang Integrated Image System (WIIS). Wang estimates the potential market for image processing to be about $2.5 billion. Although critics chide Wang for adopting its expensive broadband coaxial cabling as the transmission medium for WIIS, corporations can substitute twisted-pair wiring on portions of their WIIS networks. In the future, says Paul, Wang will give users the ability to run image processing over Ethernet cabling.

Gartner Group's George Weiss notes that the outlines of Wang's image processing strategy are not new. Wang has sought the magical new technology that would fuel high growth before, he says. Among its attempts: integrated voice and data communications, private branch exchange integration, and broadband LANs. None have succeeded, Weiss notes.

Wang's quest for the technological Holy Grail has distracted it from becoming a general-systems vendor in the ranks of DEC and Hewlett-Packard, Weiss believes. "MIS is ambivalent—in many cases negative—about Wang because of its tardiness in becoming a general data processing and office systems vendor," he asserts.

Wang's reputation has suffered in spite of its technology, which analysts agree features solid general-purpose processors with superior IBM connectivity and strong Unix support. Wang's processors can run both Unix and its VS operating system in efficient native mode. Greg Marus, an analyst at Dataquest (San Jose, CA), believes Wang has moved further than any of its competitors toward "mixed mode" processing—the combination of data, text, image, and voice processing. This progress, he believes, will give Wang an advantage in the development of new systems.

Other criticism of Wang centers on its lateness in delivering key products and its lax software support. Paul asserts that Wang has turned the corner on the support problem by establishing four support centers throughout the country. Ted Hutton, manager of systems and services at the Port of Seattle (WA), confirms that the new centers have quickly improved Wang's customer support. Most software problems are handled over the phone, Hutton reports. He adds that as long as Wang can serve his organization's needs, he will stick with the vendor.

More than any of the other mini Bunch vendors, Wang faces severe competition from LANs. Many corporations are replacing their small Wang minicomputers with networked PCs linked to electronic-mail systems from IBM or DEC, says Patricia Seybold. "Corporations typically had electronic mail in place before they bought Wang office systems," she says. "Although some large Wang customers are still committed to Wang's electronic mail, they are in the minority."

Gerald Paul acknowledges the trend toward replacement of dedicated word processors with PCs, but downplays the impact on Wang. "Word processing accounts for a very small portion of Wang's overall data processing and communications offerings," he says, "especially compared with what it was three or four years ago."

Looking Ahead

There are more questions than answers about the mini Bunch, but at least the direction that each vendor is taking is clear. Ultimately, MIS managers must decide, as did Data General user Bob Hantack of Beneficial, whether to stick with systems diversity and on what terms.

Those terms may continue to change. The industry's rapid pace of development means market positions are fleeting at best. Long-term, Patricia Seybold counsels MIS to keep an eye on service and support as the most vital offerings of any vendor, not just those selling midrange systems. She believes the future belongs to vendors that can offer sophisticated systems integration services, be they hardware vendors, software houses, or companies like Arthur Andersen & Co.'s information systems unit.

The systems vendors Seybold believes have the capability of becoming systems integrators are Hewlett-Packard and Wang, and, not surprisingly, IBM and DEC. These companies, says Seybold, have been using technology to support their own businesses, and will leverage that experience. For now, MIS must decide which vendors are worth staying with for the long haul by asking hard questions and demanding answers. D